REMARKS

The Office Action dated December 18, 2006 has been received and carefully noted. The above amendments to the claims, and the following remarks, are submitted as a full and complete response thereto.

Claims 1, 12, 16, and 20-22 have been amended to more particularly point out and distinctly claim the subject matter of the invention. Claim 2 has been canceled without prejudice or disclaimer. No new matter has been added and no new issues are raised which require further consideration or search. Claims 1 and 3-24 are currently pending in the application and are respectfully submitted for consideration.

Claims 6-7 and 23-24 were rejected under 35 U.S.C. §102(b) as being anticipated by Larsson (U.S. Patent No. 6,282,427). The rejection is respectfully traversed for the following reasons.

Claim 6 recites a method including triggering a location process, obtaining selection information for selection of at least one measurement device, the selection information including information of measurement devices that have historically provided measurement information that satisfies a predefined criteria, selecting at least one measurement device, and locating user equipment based on measurement information from the selected at least one measurement device.

Claim 7, upon which claims 8-11 are dependent, recites a method including storing historical data of various measurements in a mobile system, selecting at least one

measurement device based upon the historical data, and self-learning based upon selected historical data associated with measurement devices.

Claim 23 recites a system comprising triggering means for triggering a location process, obtaining means for obtaining selection information for selection of at least one measurement device, the selection information including information of measurement devices that have historically provided measurement information that satisfies a predefined criteria. The system further comprises selecting means for selecting at least one measurement device, and locating means for locating user equipment based on measurement information from the selected at least one measurement device.

Claim 24 recites a system comprising storing means for storing historical data of various measurements in a mobile system, selecting means for selecting at least one measurement device based upon the historical data, and self-learning means for self-learning based upon selected historical data associated with measurement devices.

Therefore, the present invention is directed, in part, to a method in which location measurement units (LMUs) are selected on the basis of which LMUs have historically provided the best quality measurements for a specific area, and not simply based on the quality of the geographical location of the LMUs. The claimed invention can provide better quality location information by selecting LMUs according to the success of past measurements, rather than just selecting LMUs according to the quality of geographical location. For example, "if a mobile station to be located happens to be in a concrete

building, even a close-by LMU might not be able to receive it, especially if the LMU is situated on the other side of the building" (Specification, page 6, lines 12-16).

As will be discussed below, Larsson fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the advantages and features discussed above.

Larsson discloses an apparatus and method of selecting location measurement units for measuring an uplink signal transmitted by a mobile communication station operating in a wireless communication network in order to locate the position of the mobile communication station in the wireless communication network. The location measurement units to be used in measuring the uplink signal can be identified by evaluating one or more of relative positional relationships between the possible position of the mobile station and a plurality of further positions respectively associated with a plurality of location measurement units in the network, path loss measures predicted for each of a plurality of location measurement units relative to the possible position of the mobile station, and geometric dilution of precision (GDOP) values determined for each of a plurality of groups of location measurement units with respect to the possible position of the mobile station.

Applicants respectfully submit that Larsson fails to disclose or suggest all of the elements of claims 6-7 and 23-24. For example, Larsson does not disclose or suggest "obtaining selection information for selection of at least one measurement device, the selection information including information of measurement devices that have historically provided measurement information that satisfies a predefined criteria," as

recited in claims 6 and 23. Similarly, Larsson does not disclose or suggest "storing historical data of various measurements in a mobile system; selecting at least one measurement device based upon the historical data," as recited in claims 7 and 24.

According to embodiments of the present invention, selection information is obtained for the selection of appropriate location measurement devices. The selection information may include historical data regarding the measurement devices that have historically provided measurement information that satisfies predefined criteria. Furthermore, the selection of an appropriate location measurement unit may include self-learning based upon historical quality information of the location measurement devices. The selection may also include the ranking of possible location measurement devices based upon historical quality information of the location measurement units (Specification, paragraphs 0050-0051 and Figure 3).

In contrast, Larsson fails to disclose or suggest the use of any such historical data. Larsson merely discloses calculating a rough location area in which the mobile station could possibly be located using the serving cell identity and the Timing Advance Value (Larsson, Column 3, lines 39-42). Next, the MLC searches its database for those location measurement units that are closest to the middle of the location area (Larsson, Column 4, lines 19-21). Larsson, however, fails to disclose or suggest selecting the location measurement unit to be used for a location determination on the basis of the quality of results of past measurements made by the location measurement units. Specifically,

Larsson makes no mention of storing or obtaining historical data regarding the location measurement devices.

Thus, Larsson does not disclose or suggest all of the elements of claims 6-7 and 23-24. As such, Applicants respectfully request that the rejection of claims 6-7 and 23-24 be withdrawn.

Claims 1-5, 12-14, 16-19 and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Larsson in view of Stilp (U.S. Patent No. 6,661,379). Applicants note that, although the Office Action states that claims 3, 4, 8-11, and 15 were rejected over the combination of Larsson and Stilp, this appears to be a typographical error as made clear by the substantive discussion of the rejection (see Office Action, pages 4-8). If Applicants have misconstrued this rejection, it is respectfully requested that a new non-final Office Action be issued which clearly states the intended claim rejection. This rejection is respectfully traversed for the following reasons.

Claim 1, upon which claims 2-5 are dependent, recites a method including providing quality information regarding quality of results of past measurements associated with location determination by at least two measurement devices, storing the quality information and identity information associated with the at least two measurement devices, and providing selection information for selection of measurement devices for future location determinations based upon the stored quality and identity information. The providing selection information comprises self-learning based upon historical quality information associated with the measurement devices.

Claim 12, upon which claims 13-15 are dependent, recites a location system including at least two measurement devices configured to provide measurement data for location determination, a quality controller configured to provide quality information regarding quality of results of past measurements by the at least two measurement devices, a storage configured to store quality information of measurements by the at least two measurement devices, and a selection controller configured to provide selection information for selection of measurement devices for future location determinations based upon quality information that is stored in the storage. The location system is configured to self-learn based upon the quality information regarding the quality of results of past measurements by the at least two measurement devices.

Claim 16, upon which claims 17-19 are dependent, recites a network element for a mobile system. The network element includes a processor configured to process quality information associated with the quality of results of past location measurements by a plurality of measurement devices and to provide selection information for selection of at least one measurement device for future location determinations based upon the quality information. The processor is further configured to self-learn based upon the quality information associated with the quality of results of past location measurements.

Claim 22 recites a system including providing means for providing quality information regarding quality of results of past measurements associated with location determination by at least two measurement devices, storing means for storing said quality information and identity information associated with the at least two measurement

devices, and selecting means for providing selection information for selection of measurement devices for future location determinations based upon the stored quality and identity information. The selecting means comprises self-learning means for self-learning based upon historical quality information associated with the measurement devices.

As mentioned above, the present invention is directed, in part, to a method in which location measurement units (LMUs) are selected on the basis of which LMUs have historically provided the best quality measurements for a specific area, and not simply based on the quality of the geographical location of the LMUs. The claimed invention can provide better quality location information by selecting LMUs according to the success of past measurements, rather than just selecting LMUs according to the quality of geographical location.

As will be discussed below, the combination of Larsson and Stilp fails to disclose or suggest all of the elements of the claims, and therefore fails to provide the advantages and features discussed above.

Larsson is discussed above. Stilp discloses an antenna selection method in a wireless location system that determines the geographic location of a mobile wireless transmitter. The wireless location system includes signal collection systems connected to multiple antennas at a plurality of cell sites and a location processor for processing digital data provided by the signal collection systems. The antenna selection method comprises evaluating segments of data collected from a plurality of antennas at a signal collection

system, selecting a subset of the segments of data, and using only the selected segments of data in location processing.

Applicants respectfully submit that the combination of Larsson and Stilp fails to disclose or suggest all of the elements of the present claims. For example, Larsson and Stilp, whether viewed individually or combined, do not disclose or suggest "self-learning based upon historical quality information associated with the measurement devices," as recited in claims 1, 12, 16, and 22.

As outlined in the present specification, embodiments of the present invention include self-learning based upon historical quality information of the location measurement devices (Specification, paragraph 0051). For example, a SMLC may create a self-learning table 16 or similar where available look-up parameters before an Uplink Time Difference Of Arrival (U-TDOA) location attempt, such as cell identities (CI) and timing advance (TA) values or location estimate based on them, are matched with information regarding the success of a respective location measurement unit (LMU) measurements that are obtained after U-TDOA location attempts (Specification, paragraph 0052). In other words, the location server may maintain statistical/history information about which LMUs were able to receive transmissions from a mobile station when certain CI and TA or location estimate based on them were observed. An U-TDOA location measurement unit (LMU) is configured to be self learning based on history data (analysis) which can be used as a selection criteria when selecting proper location measurement units which have provided good quality measurements historically.

Neither Larsson nor Stilp disclose or suggest that the location measurement units are configured to be self-learning based upon historical data that can be used as selection criteria. Larsson, as discussed above, merely discloses the selection of location measurement units based on their geographical location. Stilp only discloses that a candidate list of signal collection systems are selected "using a predetermined set of criteria based, for example, upon knowledge of the types of cell sites, types of antennas at the cell sites, geometry of the antennas, and a weighting factor that weights certain antennas more than other antennas. The weighting factor takes into account knowledge of the terrain in which the Wireless Location System is operating, past empirical data on the contribution of each antenna has made to good location estimates, and other factors that may be specific to each different WLS installation" (Stilp, Column 59, lines 7-17). However, Stilp fails to disclose or suggest that the wireless location system is self-learning based upon based upon historical quality information that can be used as selection criteria.

Therefore, the combination of Larsson and Stilp does not disclose or suggest all of the elements of claims 1, 12, 16, and 22. As such, Applicants respectfully request that the rejection of claims 1, 12, 16, and 22 be withdrawn.

Claims 2-5, 13-14, and 17-19 are dependent upon claims 1, 12 and 16, respectively. Accordingly, claims 2-5, 13-14, and 17-19 should be allowed for at least

their dependence upon claims 1, 12, and 16, and for the specific limitations recited therein.

Claims 8-11 and 15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Larsson in view of Nowak (U.S. Patent No. 6,968,195). The rejection is respectfully traversed for the following reasons.

Larsson is discussed above. Nowak discloses a method and apparatus for managing the selection of location information sources to provide location information for a mobile communications unit. Embedded within a request for location information on a particular mobile communications unit are one or more specifications regarding the quality of the requested location information. The specifications are used to determine if any location information sources are able to provide the location information with the desired location information quality. Upon locating a location information source capable of providing the requested location information, the source is invoked to the particular location information source.

Claims 8-11 and 15 are dependent upon claims 7 and 12, respectively. As discussed above, Larsson fails to disclose or suggest selecting a measurement device based upon stored historical data, as recited in claims 7 and 12. Furthermore, Nowak also fails to disclose or suggest this limitation of the claims. Nowak only discloses a technique for selecting one of a plurality of types of position determining equipment depending on the accuracy required by the requestor of the location information. Therefore, the combination of Larsson and Nowak fails to disclose or suggest all of the

elements of claims 8-11 and 15. In addition, claims 8-11 and 15 should be allowed for at least their dependence upon claims 7 and 12, and for the specific limitations recited therein.

Claims 20 and 21 were rejected under 35 U.S.C. §103(a) as being unpatentable over Nowak in view of Stilp. The rejection is respectfully traversed for the following reasons.

Claim 20 recites a user equipment for a mobile system. The user equipment includes a processor configured to process quality information associated with the quality of results of past location measurements by a plurality of measurement devices of a first type and to provide selection information for selection of which of said plurality of measurement devices of a first type to use for future location determinations based upon the quality information. The processor is further configured to self-learn based upon the quality information associated with the quality of results of past location measurements.

Claim 21 recites a computer program comprising program code means adapted to perform the following when executed on a computer: providing quality information of results of past location measurements by a plurality of measurement devices of a first type, obtaining selection information for selection which of said plurality of measurement devices of a first type to use for future location determinations based upon the quality information when the program is run on a computer, and self-learning based upon the quality information of the results of past location measurements by the measurement devices.

As discussed above, both Nowak and Stilp fail to disclose or suggest self-learning based upon the quality information of the results of past location measurements by the measurement devices, as recited in claims 20 and 21. Nowak only discloses a technique for selecting one of a plurality of types of position determining equipment depending on the accuracy required by the requestor of the location information. Stilp only discloses that a candidate list of signal collection systems are selected "using a predetermined set of criteria based, for example, upon knowledge of the types of cell sites, types of antennas at the cell sites, geometry of the antennas, and a weighting factor that weights certain antennas more than other antennas. The weighting factor takes into account knowledge of the terrain in which the Wireless Location System is operating, past empirical data on the contribution of each antenna has made to good location estimates, and other factors that may be specific to each different WLS installation" (Stilp, Column 59, lines 7-17).

Therefore, the combination of Nowak and Stilp fails to disclose or suggest all of the elements of claims 20 and 21. Accordingly, Applicants respectfully request that the rejection of claims 20 and 21 be withdrawn.

Applicants respectfully submit that Larsson, Stilp and Nowak, whether considered alone or in combination, fail to disclose or suggest all of the elements of the claimed invention. These distinctions are more than sufficient to render the claimed invention unanticipated and unobvious. It is therefore respectfully requested that all of claims 1 and 3-24 be allowed, and this application passed to issue.

If for any reason the Examiner determines that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the applicants' undersigned attorney at the indicated telephone number to arrange for an interview to expedite the disposition of this application.

In the event this paper is not being timely filed, the applicants respectfully petition for an appropriate extension of time. Any fees for such an extension together with any additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

Majid S. AlBassam
Registration No. 54,749

Customer No. 32294
SQUIRE, SANDERS & DEMPSEY LLP
14TH Floor
8000 Towers Crescent Drive
Tysons Corner, Virginia 22182-2700
Telephone: 703-720-7800
Fax: 703-720-7802

MSA:jf